

# The Material Culture of Oruarangi, Matatoki, Thames.

## 2. Fish Hooks.

By V. F. FISHER, Assistant Ethnologist.

Under the above heading many interesting specimens were secured, the majority being fish-hook points. In this section, the terminology used for describing the parts of a hook, follows that used by Te Rangi Hiroa (Dr. P. H. Buck), as recorded in recent Bulletins of the Bernice Pauahi Bishop Museum. (See References.)

In the Oruarangi collection there are only two one-piece hooks, as against over one hundred and ninety-two points of composite hooks, besides numerous fragments. The scarcity of one-piece hooks is all the more remarkable when we consider the fact that such hooks were formerly made in great numbers at Mercury Bay, Waihi Beach and other adjacent localities. It seems clearly established, then, that the composite hook was the favourite type at Oruarangi.

### Shanks.

Although comparatively few shanks were found, they showed a great divergence in type. With the exception of two specimens, one of shell, and the other of stone, all were of bone. The dearth of bone shanks can possibly be accounted for by the fact that the majority of shanks had probably been made of wood which would quickly decay.

At the end of this section will be found a table giving dimensions and details of the individual shanks. The table in question is based on a similar one drawn up by Teviotdale (1929, p. 280).

It is perhaps appropriate to deal first with an already well-known type, represented by Nos. 19566.6 and .7 (Plate 67, figs. 90, 91), a type commonly found in various parts of New Zealand. The first is a crudely fashioned specimen, quadrangular in section, with neither the shank knob, nor the tail grooves well developed. Its companion .7 is a fine example of a straight shank, round in section, with the shank modified owing to the drilling of a hole for the attachment of the snood. A conspicuous feature on each side of the hole is an eye carved in high relief. The illustration does not show this very clearly, but a careful scrutiny will disclose the eye on the left-hand side. Teviotdale (1929, p. 276) mentions that the Otago University Museum has two specimens

which "have very neatly-cut spirals on each side of the head." There are three other specimens in the Auckland Museum, which are decorated at the head with either spiral carving or concentric circles. The best of the three is a fine example from Otumoetai, near Tauranga, the second is from Mahia Peninsula, and the third, which is in the Sir George Grey Collection, has no recorded locality.

In the British Museum is a hook figured by Beasley (1928, p. 7), the shank of which has what he terms a "boss" on either side. He says, referring to this feature, that it is "a fairly common occurrence with hooks of this type." Presumably he has in mind hooks from other areas besides New Zealand, where this particular type with the "boss" is rare. He suggests with a good deal of probability that the bosses were intended to represent the eyes of a fish.

Fig. 92 is a curiously shaped shank quite unlike anything else in the Auckland Museum collection. It appears to be made from whalebone and has a hole at the top of the shank, much larger than is usual. At the tail end there is a big projection, and between this projection and the end of the tail is a wide indentation which measures 16 mm. Judging from the size and strength of the shank it must have been used when angling for a large fish.

An examination of fig. 93 discloses a type quite different from any other in the collection. The greater part of the shank is straight, but near the tail it takes a decided bend at a sharp angle. All the specimens that are recorded from Otago appear to be either straight or evenly curved throughout their length, and none has such a sharp bend. The groove at the knob is very deeply cut, evidently to allow the snood to be securely fastened. The two tail grooves display excellent workmanship, and are of about equal width, while the end of the tail has been squared off and not bevelled. It is in every way a strongly made shank capable of giving extremely good service.

There are five specimens made from a portion of the lower jaw-bone of the native dog, or *kuri*. In two of these the ingenious Maori who fashioned them has left the inferior border of the body of the jaw intact and has cut away a piece of bone of about 3 mm. in width at the front of the bone. This piece increases to about 7 mm. in width towards the back. The natural curve of the inferior border has thus been made to serve the very useful purpose of keeping the tip of the point well away from the shank, when lashed in position. Although the dental groove is still apparent, it does not impair its efficiency. This type is seen to advantage in fig. 94, a specimen which impels admiration for the careful workmanship of the Maori craftsman. The six notches, three on either side of the part that corresponds to the knob of most shanks, have been deeply cut, with the top terminating in a sharp point. The base has two carefully cut tail grooves, and is bevelled on the inside in order to receive the base of the point, which we infer was also bevelled so that a neat join could be effected.

The knob notches of its companion (fig. 95) are not quite finished, but the base shows both the tail grooves and the bevel carefully executed. On the edge, which is not shown in the illustration, there are nineteen shallow cuts made at irregular intervals, but not extending along the entire edge. These are applied solely for decorative purposes. The back has been slightly reduced, as it appears a trifle flattened when compared with an untouched jaw-bone.

Although the next specimen (fig. 96) is broken, it is of great interest owing to the fact that it has been cut from the superior border of the lower jaw-bone, with the result that the sockets for the teeth are a noticeable feature. These sockets have weakened the shank, for the break has occurred at the socket usually filled by the front fang of the first molar. The tail of the shank has been carved out of the anterior border of the ramus, thus producing a curved specimen. The three tail notches and the bevel are neatly finished. The author does not remember seeing any previous reference to the fashioning of shanks from the lower jaw-bone of the native dog.

The next two specimens for review are somewhat similar in many respects. The longer of the two, fig. 97, is a slender, curved shank, 8 mm. in length, with a small, well cut knob, a feature which it shares with its companion, fig. 98. The tails of the two differ; in fig. 97 there are three notches and a bevelled edge, while in fig. 98 no attempt at either of these features is noticeable, though perhaps some further work was intended.

So far all the shanks described have been manufactured from bone. There are, in fact, only two examples made from other material, one of stone and one of shell.

The stone shank, fig. 99, is a poor specimen 61 mm. in length and would not be considered here but for the rarity of stone shanks from this site. At the top of the shank is a faintly cut line, but there is no sign displayed of the careful treatment often given to stone shanks. At the tail a slight bevel is discernible, but, apart from these two features, it is devoid of other marks. The stone itself is rather rough, though this may be due, in part, to weathering.

The scarcity of shell shanks in collections adds interest to this specimen (fig. 100) from Oruarangi. In the Dominion Museum there are several shell shanks in the Bollons Collection, and there are also a few perfect specimens, and many fragments, in the Auckland Museum, most of which came from the North Cape and surrounding districts.

The present specimen is made from the columella of the *paua*, *Haliotis iris*, and is in a fair state of preservation. The natural shape of the columella supplied a well curved shank, while the iridescence of the shell probably acted as a lure. The shank knob, which is not very pronounced, is rounded at the top, notched in two places on the one side, and on the other, though slightly damaged, still shows one notch. The tail notches, two in number,



are clearly marked on the right hand side, but they were apparently not finished on the left hand side. At the base a wide V-shaped notch is a conspicuous feature in the illustration owing to the angle at which the photograph was taken. The shank measures 85 mm. from the top to the base of the tail.

In the Auckland Museum is a *paua* shell shank, from Cape Maria van Diemen, which is decorated with notches along both edges. This shank is mentioned by Hamilton (1908, p. 32) and illustrated in the same work in fig. 21. The Oruarangi specimen shows no sign of such decoration.

The following table gives details of the shanks mentioned in the text:—

Museum No.	Fig.	Length. mm.	Greatest Width, mm.	Depth. mm.	No. of Tail Grooves or Notches.	Material.
19566.6	90	84	14	5	1 groove	Bone.
" .7	91	91	16	14	1 groove	Bone.
" .4	92	103	5	17	—	Whalebone.
" .2	93	91	6	8	2 grooves	Whalebone.
" .11	94	89	9	6	2 grooves	Lower jaw of native dog.
" .8	95	92	9	7	2 grooves	Lower jaw of native dog.
" .5	96	Broken	9	7	3 notches	Lower jaw of native dog.
		52				
" .13	98	57	5	6	—	Lower jaw of native dog.
19573	99	61	11	10	—	Stone.
19586	100	85	13	9	2, plus a terminal notch	Columella of <i>paua</i> shell ( <i>Haliotis iris</i> ).
19566.10	97	88	6	8	3 grooves	Lower jaw of native dog.

### Fish-Hook Points.

The collection of points from this area is especially interesting, both in the numbers found and in the variations in the individual points. It will be shown at a later stage that a special type predominated. Another feature of interest is the fact that, with few exceptions, most of the points were barbed.

The barbed point in New Zealand is of great interest, owing to the fact that, while it was present in parts of Polynesia, such as Tonga and Hawaii, it was apparently lacking in the Society Islands and the Cook Islands. Seeing that it was from those areas that the ancestors of the Maori migrated to New Zealand on the last stage of their meanderings, one is forced to the conclusion that the barbed point as used by the Maori probably originated in New Zealand.

Te Rangi Hiroa (1927, p. 316) has already referred to this matter when he writes: "If there are no barbed hooks in the part of Polynesia from whence the Maori came, it becomes an interesting speculation as to where the Maori and Moriori of the Chatham Islands obtained the barb."



Beasley (1928, Plates LXII. and LXIII.) figures five hooks with barbed points said to be from Tahiti, but personally the writer agrees with Skinner (1930, p. 311) that these hooks are not even Polynesian, let alone Tahitian.

The barbed point is, of course, commonly distributed throughout New Zealand. Possibly the fact that fishing with the line was more suited to New Zealand conditions, would lead to the invention of the barbed point, supposing that the knowledge of such a device had been lost earlier in the history of the race.

### Dog Jaw Points.

The points of greatest interest, owing to their rarity, are undoubtedly those made from the lower jaw-bone of the native dog. Seven of this type are included in the collection, five of which are figured here. A complete jaw-bone is also figured (101a) for comparison with the points. In order to fashion the distal end of the point, part of the ramus was cut away, leaving a portion of the coronoid process, to form the tip of the point. In most of the specimens the body of the jaw-bone was treated differently, as is described below.

The choicest specimen is fig. 101, which has been carefully fashioned throughout. The outer curve has five barbs and two notches. The first notch is on the mandibular symphysis. As a result of this notching and barbing, only a short length of the inferior border remains unworked. Of exceptional interest is the fact that most of the teeth are still in the sockets, but they have been cut or filed down, level with the superior border. The only exception is a part of the first molar, which has been left uncut to serve as a barb on the inner curve, a contrivance which has been recorded only twice previously. Beasley (1928, Plate XXIV.) figures a hook, the point of which is made from the jaw-bone of the *kuri*. On the inner curve a "molar tooth ground to a point serves as a secondary barb." Skinner (1924, p. 20) mentions a point of a barracouta hook, "which is made from the lower jaw of the dog, and has the canine tooth as part of it."

Another fine specimen, shown in fig. 102, has a slight barb on the inner curve, but lacks the tooth shown in the previous specimen. The ramus has been cut well away, leaving a slender, but very strong point. The notches at the base are deeply cut; this is necessary with a large point of this type, in order to make certain that the point when lashed to the shank is securely held.

A small, well made specimen is seen in fig. 103. In this specimen the inferior border has been reduced to such an extent that the outer edge of the point almost reaches the dental groove. No barbs have been formed on this point, but the natural undulations of the mouths of the sockets may have served that purpose. In fact, it seems likely that for practical reasons they were left untouched.

A great deal of material was carved away from the jaw-bone to make this point, fig. 104. Thus the inferior border has been

worked down to the dental groove, most of the ramus cut away, and the teeth either removed or filed down level with the superior border.

Unfortunately fig. 105 was broken. It has every sign of being carefully finished. There are seven barbs on the outer curve, the greatest number the writer has observed on a point of this type. Beasley (1928, p. 13) has referred to the scarcity of this type of point as follows: "This hook must surely be unexampled, in that the barb [point] is formed from the jaw-bone of a dog; the ramus forms the point, while a molar tooth ground to a point serves as a secondary barb. I have met with no other similar example, excepting perhaps . . . where portions of a human jaw-bone are used."

Though these points are not so scarce as Beasley thought, they are certainly far from common. In addition to the seven mentioned as belonging to Oruarangi there are in the Museum collection three other perfect specimens, obtained from North Cape, D'Urville Island and one unknown locality; there is also a broken specimen from Murdering Beach.

Both the Dominion Museum and the Otago University Museum possess a number. The latter institution has three from Oruarangi. The writer is of the opinion that when their distribution is worked out it will be found that they are not restricted to particular areas, but are general throughout New Zealand.

Details of the specimens figured are given in the following table:—

Museum No.	Fig.	Length. mm.	Barbs on Outer Curve.	Notches at Base.
19562. 1	101	102	5	2
" . 2	102	87	1	3
" . 5	103	77	0	0
" . 6	104	74	0	4
" . 7	105	Broken	7	Broken

### Dog Tooth Points.

From our survey of fish-hook material from Oruarangi, we have noted that the lower jaw-bone of the native dog supplied the Maori with material wherewith to carve out shanks and points. Even then the possibilities were not exhausted, as canine teeth, both upper and lower, were used for making barbed points. With one exception they are all barbed points, but the number of barbs is not constant, varying from one to five. Thus there may be one, two, three, four or five barbs, while only one lacks a barb. On the inner curve the majority of specimens show only one barb, while a few lack barbs, and in one instance two barbs are noted.

The preparation of the base of the point for attachment to the shank has been carried out in three ways. In some cases

notches, varying in number from one to four, have been cut out on the outer curve. In other cases a bevel has been cut on the inner curve, and in one instance, in addition to these features, a hole has been drilled.

Fuller information relating to these points is given in detail in the following table:—

Museum No.	Fig.	Length. mm.	Barbs on Outer Curve.	Barbs on Inner Curve.	Notches at Base.	Bevelled or Drilled.
19585. 1	106	38	—	—	—	—
" . 2	107	31	2	—	2	—
" . 3	108	37	4	1	2	Bevelled.
" . 6	109	35	3	1	2	Bevelled.
" . 7	110	34	3	1	Wide groove	Bevelled & Drilled.
" . 8	111	37	2	—	—	Bevelled.
" . 9	112	36	3	1	2	Bevelled.
" .11	113	36	2	1	3	Bevelled.
" .12	114	41	5	1	3	Bevelled.
" .15	115	30	—	1	2	Bevelled.
" .16	116	36	1	1	3	—
21596. 2	117	40	5	2	4	Bevelled.
370 (Liggins Coll.)	118	36	2	1	2	Drilled.

Much interest is attached to fig. 106, which shows a tooth cut in three places. The top cut on the outer curve is evidently the first stage in the making of a barb. Similarly the lower incision paves the way for a notch used for purposes of lashing. It is difficult to ascertain the reason for the cut on the inner curve, because if the craftsman intended to bevel it, as was done in other examples, the cut appears to be set rather high.

The use of hooks mounted with a canine tooth must be to some extent a matter for conjecture. Best (1929, p. 37) writes: "Dogs' teeth are said to have been sometimes used in the manufacture of hooks for taking the barracouta." In the same work (p. 44) appears the statement that "another early writer states that barracouta-hooks had a number of dogs' teeth secured to them so that they resembled a saw."

From our knowledge of points that were definitely lashed to wooden shanks to form barracouta-hooks (*pohau manga*), all of which are much larger than the canine teeth of the *kuri*, the writer is inclined to doubt whether the teeth were large enough to be used for the purpose suggested by Best's informants.

### Imitation Dog Tooth Points.

A series fairly well represented at Oruarangi is that which contains a number of small points, which in size and general shape, resemble very closely the canine tooth of a native dog. If this resemblance has any significance—and the writer thinks it



has—one of two things may have happened. The canine tooth may have been used as a point, and then at some stage copied in bone, or the process was reversed, that is to say, a point of a certain recognised shape being in use some resourceful person, observing the general resemblance of this bone point to a tooth, utilised the latter as a point. It is impossible to be certain which was the earlier form.

Whether any copying took place or not, a comparison of the two forms has led the writer to conclude that both were used for catching the same kind of fish.

The barbing and notching of the points is not consistent, except in the case of the barb on the inner curve, which in twenty-six of the thirty-one specimens there is only one barb.

The following table gives details of the specimens figured:—

Museum No.	Fig.	Length. mm.	Barbs on Outer Curve.	Barbs on Inner Curve.	Notches at Base.	Remarks.
19572.22	119	39	0	1	2	Bevelled at tail.
" .1	120	42	4	1	4	Bevelled and perforated.
" .30	121	41	4	1	2	Bevelled; material = wing bone of a seabird.
21596.8	122	45	3	1	2	—
19572.31	123	43	2	1	4	—
" .12	124	41	4	2	2	Bevelled.
224 (Liggins Coll.)	125	38	3	1	3	Bevelled.

### The Oruarangi Point.

For want of a good descriptive term, the writer proposes to name the next type the Oruarangi point, not, however, because it is confined to Oruarangi (it is found in other areas), but because it was the predominant type there.

An analysis of the number of points in this collection shows this very clearly. Thus, out of a total number of 192 points, 116 are of the Oruarangi type. Other types are represented as follows: Dog tooth points, 21; imitation dog tooth, 34; dog jaw-bone points, 7; miscellaneous points, 14. There were, of course, many broken points, but these are not included in the analysis recorded here.

The Oruarangi type is well illustrated in figs. 130-145, and may be defined as follows: The point limb is almost straight or slightly curved and tapers gradually towards the barb. In the vicinity of the barb, usually just beyond, the point takes a pronounced curve inwards. This type receives its characteristic appearance from the single barb on the outer surface; there may, however, occasionally be one or more additional outer barbs which are usually merely decorative. In no instance is there an inner barb. The majority of specimens have two notches at the base, but this is not a constant feature, as some lack notches altogether,

while others have one, three or four. In every case the notches are on the outer surface. Taking the point as a whole, there is a decided resemblance to a human leg and foot. This is merely mentioned as a convenient way to summarise the detailed description already given.

As reference has already been made to the distribution of the point, it is appropriate at this juncture to note one or two other localities from which it has been recorded. It is significant that all are from the Auckland District. In the Auckland Museum there are specimens from Kapowairua, North Auckland; Amodeo Bay, Coromandel Peninsula; and Tauranga. It will be noted that two of these localities, namely, Amodeo Bay and Tauranga, are not so very far distant from Oruarangi. Doubtless, further research will extend the range of the type. Beasley (1928, Plate XVII., fig. 2; Plate XVIIa., top specimen; Plate XVIII, specimen on right) figures several composite hooks, the points of which may belong to this type, but as no localities are recorded it does not prove of much assistance.

Considerable difficulty was experienced in determining the bone from which many of these points were manufactured; this difficulty was increased owing to the reducing and polishing necessary for their manufacture. Evidence was obtained, however, which showed that in over half of the specimens the material used was the lower jaw-bone of the native dog.

To achieve this, the interior or exterior surfaces of each jaw-bone were utilised. Excellent examples illustrating this method are shown in figs. 126-129. Two wide cuts are noticeable on the interior surface of a left jaw-bone. These extend from near the ramus, along the body, and cease at the mandibular symphysis. The length of the strip of bone, which is in process of removal, is 55 mm. Apparently it was originally slightly longer, as at the free end the strip is broken and not cut. The width of this strip varies somewhat, a feature of some importance, which supports the conclusion that it is a point in process of manufacture.

Commencing at the free end the width is 6 mm., it then tapers very gradually until it reaches the natural depression, where it measures 5 mm., and then widens suddenly, until just at the mandibular symphysis it is 7 mm. Judging from this specimen, the incisions were made with due regard to the ultimate shape of the point, that is to say, the point limb was tapered as it approached the barb.

In this collection there are thirty-five lower jaw-bones, which bear evidence of having been cut. Out of these there are thirty-two specimens which have been worked on both the interior and the exterior surfaces. In these cases either a piece of bone has been removed, or preliminary cutting has been carried out. In three specimens, only one surface of each has been worked. Of the points made from dog's jaw-bone the majority were from the interior surface. This may be explained by the fact that it is easier to identify points made from the inner surface, owing to

the natural depression near the mandibular symphysis. In many cases four points were probably obtained from the lower jaw-bones of any one dog.

It must be borne in mind, however, that the dog's jaw-bone was not exclusively used for making points of the Oruarangi type. Earlier in this paper (p. 291) we have described the conversion of the proximal part of a mandible into a large point and the making of shanks, and needles (Fisher, 1934, p. 279) from this bone. No doubt further work will reveal additional uses.

Human bone was also used, but, owing to the shaping of the bone, it is not easy to identify many specimens as originating from that source.

Some attention must now be bestowed upon individual points. Fig. 131 is interesting, as it illustrates the manufacture of a barb. Two incisions have been made preparatory to cutting away the bone from the side.

The longest specimen of the series is figured (fig. 141), but details are given in the table below. This specimen is excellently finished throughout, especially the notches at the base, which are deeply cut.

A table is added giving details of the Oruarangi points which are figured.

Museum No.	Fig.	Length. mm.	Barbs on Outer Surface.	Notches at Base.	Material.
19566. 3	130	55	1	1	Exterior surface of right jaw-bone of native dog.
19572. 4	131	46	—	1	Bone.
„ . 5	132	72	1	2	Interior surface of right jaw-bone of native dog.
„ . 6	133	37	1	2	Jaw-bone of native dog.
„ .10	134	60	1	3	Interior surface of right jaw-bone of native dog.
„ .11	135	44	1	1	Human bone (?)
„ .13	136	50	1	2	Interior surface of right jaw-bone of native dog.
„ .20	137	57	1	2	Interior surface of right jaw-bone of native dog.
„ .23	138	63	1	3	Interior surface of left jaw-bone of native dog.
„ .25	139	56	1	1	Interior surface of right jaw-bone of native dog.
„ . 3	140	52	1	2	Bone.
21969	141	102	1	3	Bone.
19572.29	142	85	7	4	Bone.
„ . 8	143	60	6	1	Interior edge of right jaw-bone of native dog.
„ .24	144	58	10	2	Bone.
„ .16	145	42	2	2	Human bone (?)



Specimens of the Oruarangi type which display more than one barb are very rare. Only nine are noted, four of which are illustrated (figs. 142-145). Two (figs. 143, 144) possess fine barbs extending from the main barb almost to the tip of the point. These, as hinted earlier, may perhaps be purely decorative. Fig. 145 has two distinct barbs, obviously for use.

The most unusual specimen is fig. 142, which certainly belongs to the type, but it has six deeply cut barbs set some distance away from the main barb. There is not another like it in the collection.

### Miscellaneous Points.

A statement concerning the number of points of miscellaneous types was made earlier in this paper. As shown from that number (14), the proportion is small, when the fact is realised that there were 192 points of all types. Only four will be described here. Fig. 146 portrays a bone specimen 49 mm. in length. A certain resemblance is borne to the Oruarangi point, but it is readily separated therefrom by the barbs and notches on the outer surface. There are three major barbs at the distal end and a wide groove at the proximal end. Between these there are a series of ten secondary notches, which extend along the remainder of the outer curve. The inner surface of the base is bevelled.

A small point (fig. 147), devoid of a barb, which appears to be finished, measures 33 mm. in length. In place of a notch at the base, a small projection was left to assist the firm attachment of the point to a shank.

An interesting point made from a cetacean tooth is illustrated (fig. 148), as there are no other examples of this in the Oruarangi collection. It is 71 mm. in length, and 14 mm. in width at the widest part. One barb is placed on the inner curve and three on the outer. The base has two wide, deep grooves which suggest that it was lashed to a large shank.

The only shell point is No. 18927 (fig. 149). It is cut from the periphery of *Cookia sulcata*, (*toitoi*), a shell often used by the Maori in former times for making one-piece hooks and also points. Probably the shiny, iridescent piece of shell served the same purpose as the *paua* shell of other hooks, in providing an excellent lure. It is 53 mm. in length; greatest width 11 mm. The point is without a barb and is incurved; there are three notches at the base on the inner surface.

No typical *kahawai* points were included in the collection; neither were there any fish-gorges. The popularity of bone specimens from this site, especially in view of the fact that bone pickers were common, would have led us to expect to find some evidence of the gorge.

### One-Piece Hooks.

Mention has previously been made of the scarcity of one-piece hooks from Oruarangi. This may, perhaps, be accounted for by the absence of *moa* bone, a material greatly favoured in many districts for the manufacture of one-piece hooks.

In the Museum collection there are two perfect hooks, and one in process of manufacture. A fourth specimen was kindly lent by Dr. J. B. Liggins, of Thames. These are all illustrated in figs. 150-153.

A small, neatly finished specimen made of bone is illustrated in fig. 150 (No. 19643). The shank limb and the point limb are both 29 mm. in length, while the bend is 7 mm. in width. The shank limb is practically straight, but the point limb curves gently and terminates in an unbarbed, incurved point; three small notches are carved on the shank knob.

In the Otago University Museum there is a hook from Oruarangi which is very similar to the above specimen, but unfortunately the shank limb is broken. Hooks similar to fig. 150 are commonly found on coastal areas between Tauranga and Mercury Bay.

A hook in process of manufacture is shown in fig. 151. It consists of a piece of bone 28 mm. in length, 24 mm. in width and 7 mm. in thickness. It was obtained from a human femur, the nutrient foramen of which is seen on the right-hand side. A hole has been rasped out near the centre, but much work remains to be done ere the hook is completed.

Possibly this was the method adopted in fashioning the bone hook to be next described, fig. 152. This hook differs substantially from that in fig. 150. It is wider in all its parts, the greatest width of the hook being 25 mm., and its total length is 36 mm., while at the bend it is 10 mm. in width. The shank knob is carefully fashioned and notched at the front and back. Considerable attention is focussed on the point, the barb of which is on the inner curve. Facing this barb is another barb emanating from the shank limb, 7 mm. below the top of the shank knob. The points of these two barbs are only 3 mm. apart. The outer curve of this hook is decorated with twenty-two faint cuts spaced on an average of 3 mm. apart.

In the Bollons Collection in the Dominion Museum are numerous specimens, similar in type to the hook mentioned above, but these differ chiefly in the shape of the shank knob; they were found on Mahia Peninsula and on Portland Island.

I am indebted to Dr. W. R. B. Oliver and Mr. W. J. Phillips, of the Dominion Museum, for the opportunity afforded during a recent visit to Wellington, of inspecting these and other specimens referred to in this article. Interesting comparisons were thus made possible.

To the best of my knowledge the following specimen (fig. 153) is unique, and it says much for the ingenuity of the Maori hook maker. It is made from the molar tooth of a native dog, a perfect specimen of which (fig. 154) is shown for comparison. The shank limb is cut from one fang, while the point limb is carved out of the other. The shank knob has one notch on the outer surface and the point is sharp and incurved. The distance

between the tip of the point and the shank knob is 9 mm. A factor controlling this matter is the fact that the average distance between the inner surfaces of the fang is 8 mm. Perhaps the most noteworthy feature of this hook is the clever manner in which the bend has been cut from the crown of the tooth. When a fish was caught on a one-piece hook of this shape, the strain would naturally be at the bend. The maker has probably taken this into account, with the result that the bend was naturally reinforced by the crown of the tooth. To Dr. J. B. Liggins, of Thames, my grateful thanks are due for lending this and other valuable specimens for purposes of study. The length of the specimen is 20 mm., and at the bend it is 5 mm. in width. None of the one-piece hooks features either holes or notches for a bait string.

A broad, general survey of the fish-hooks from Oruarangi has now been completed, and it is hoped will prove of value and interest for comparative purposes, particularly so when other areas in the vicinity yield up their quota of specimens illustrative of this phase of Maori industry.

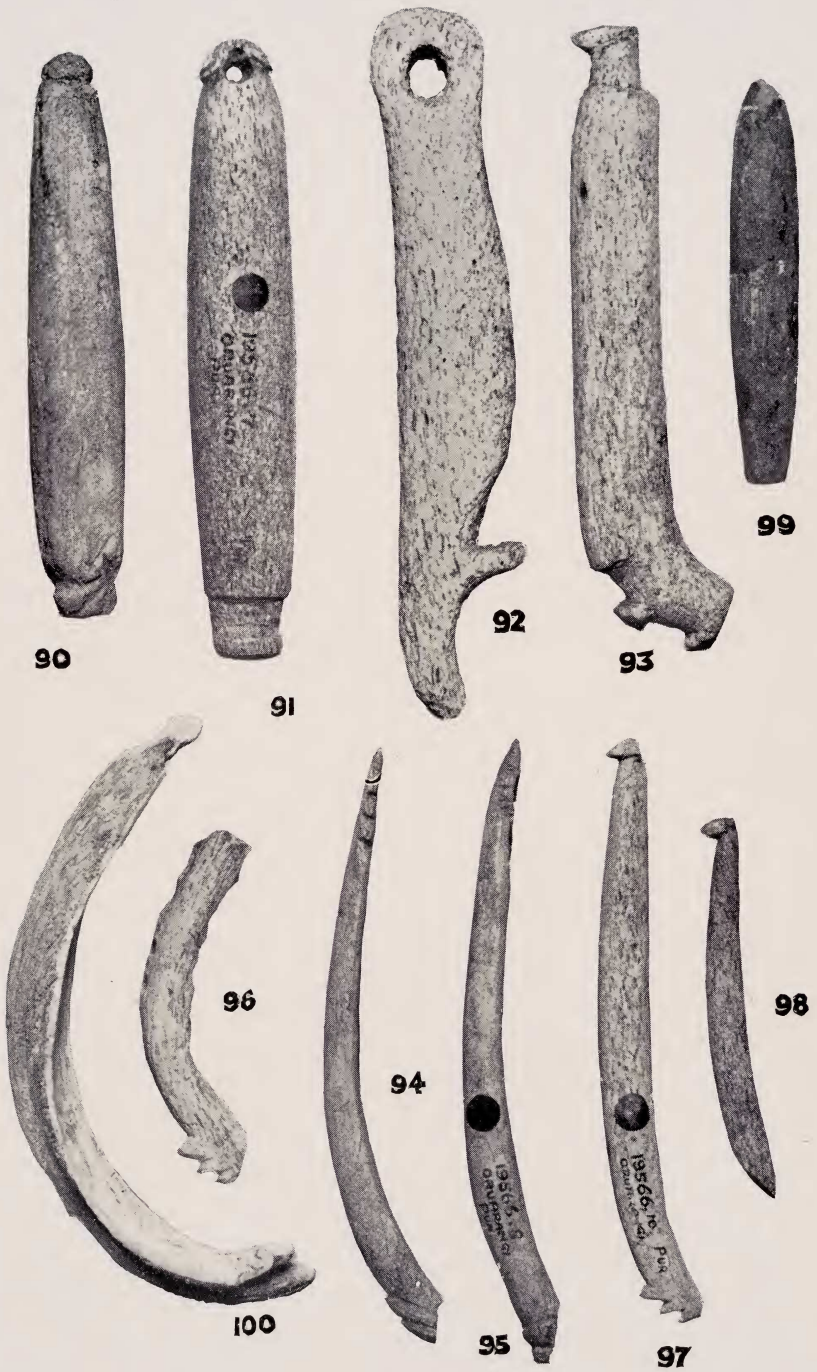
It was originally the intention of the writer to complete the record of the Oruarangi material in this paper, but it was early found advisable to confine this article to fish-hooks, because of the wealth of specimens awaiting description. A less detailed treatment would not have done justice to the subject. However, at the present stage, the writer can only say that there will be at least one other section of this paper containing some general remarks relating to the area and, possibly, a supplementary article describing the many interesting Oruarangi specimens in private collections.

In addition to those mentioned in the text, acknowledgments must be made to the following persons: To Dr. Doris Berry and Dr. J. Allan Berry, of Napier, for anatomical help; to Dr. H. A. Chatfield for information concerning jaws and teeth; to Mr. S. M. Hovell for permission to visit and excavate on the site, where the material was found; and to Mr. A. G. Stevenson for once again undertaking the photographing of the specimens, the results of which are a tribute to his skill.



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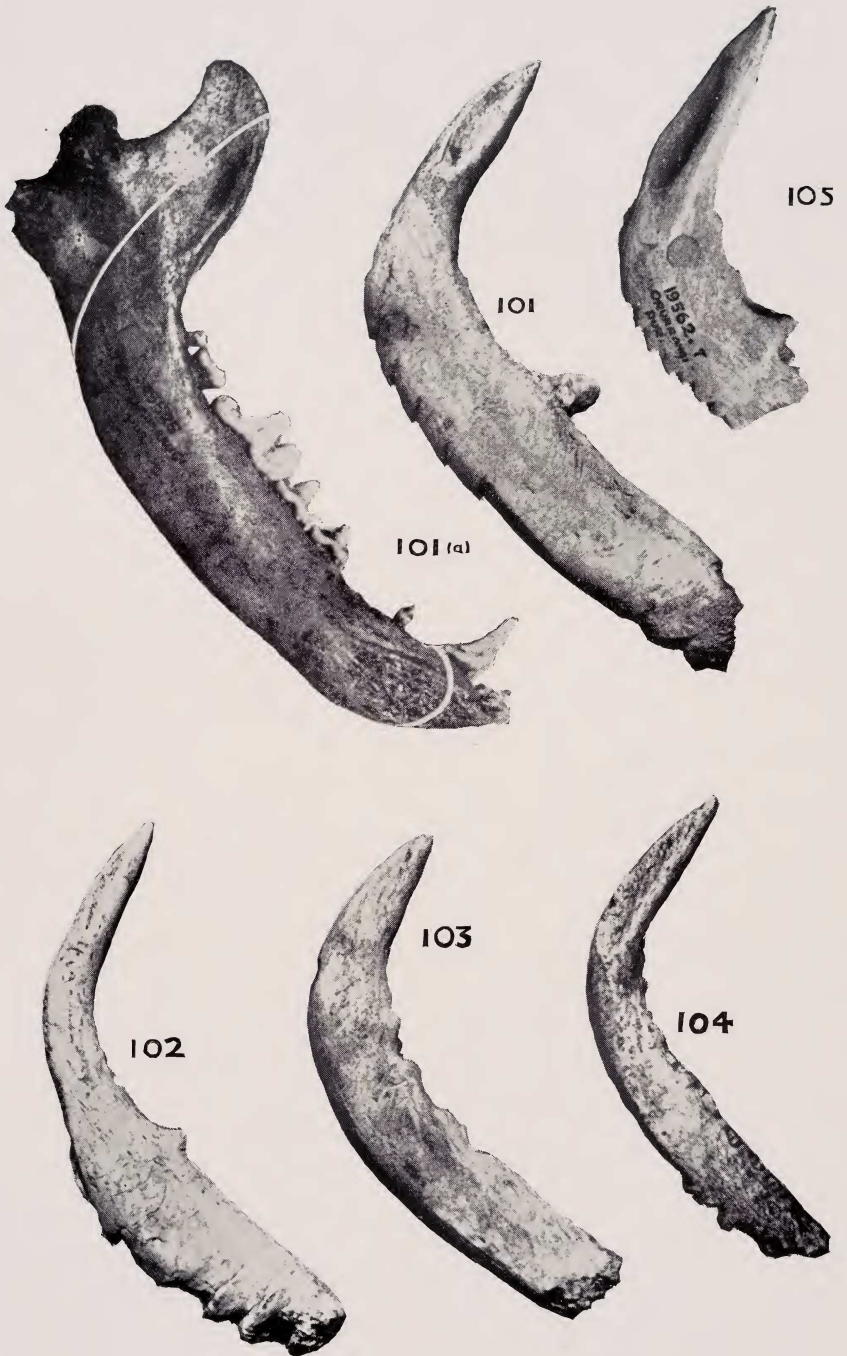


Figs. 90-93. Bone shanks.

Figs. 94-98. Shanks made from the lower jaw-bone of the native dog.

Fig. 99. Stone shank.

Fig. 100. Paua shell shank.



Figs. 101-105. Dog jaw-bone points.

Fig. 101A. Lower jaw-bone of native dog, marked to illustrate portion used for dog jaw points.



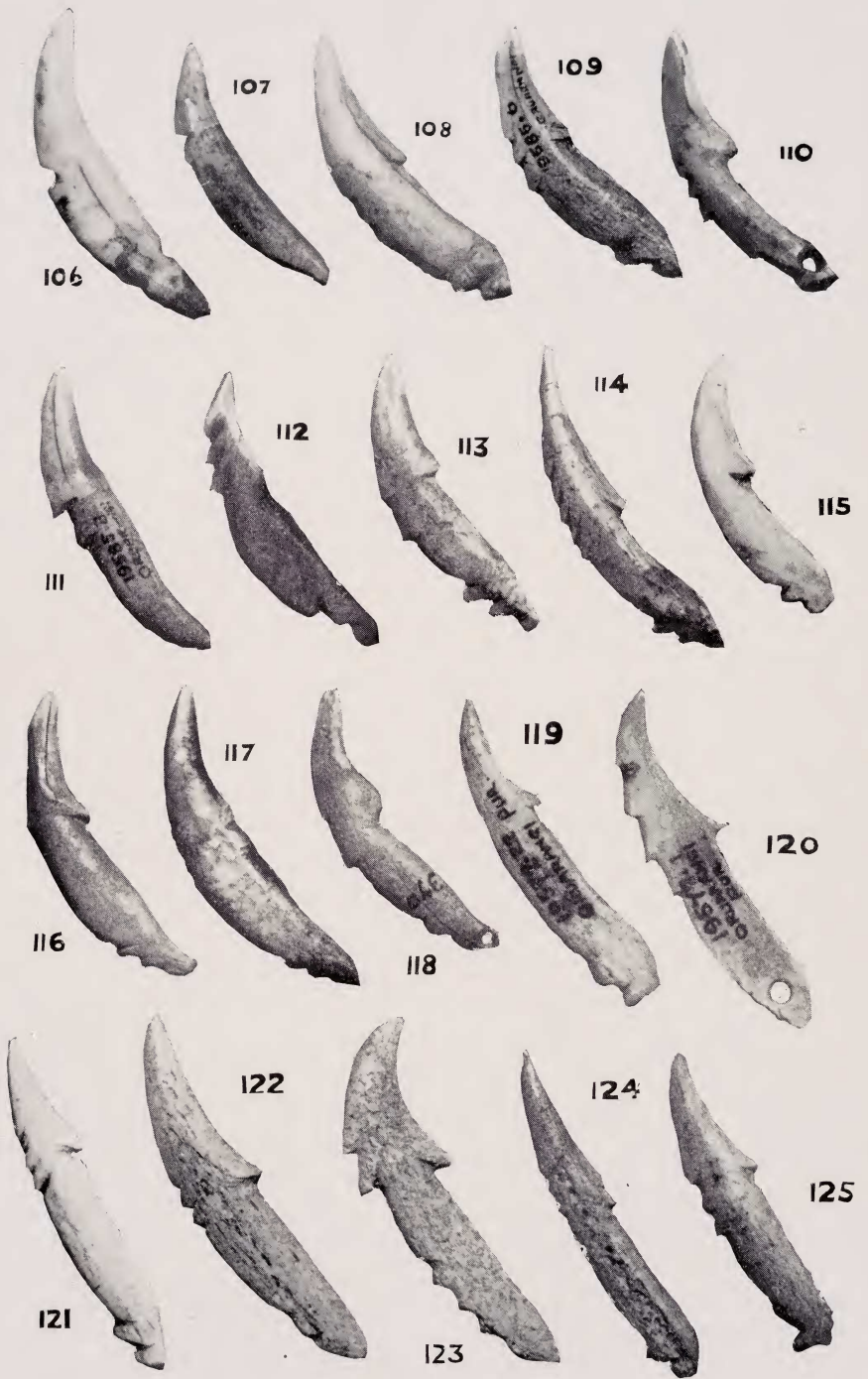


Fig. 106. Dog tooth point in process of manufacture.

Figs. 107-118. Dog tooth barbed points.

Figs. 119-125. Imitation dog tooth barbed points.

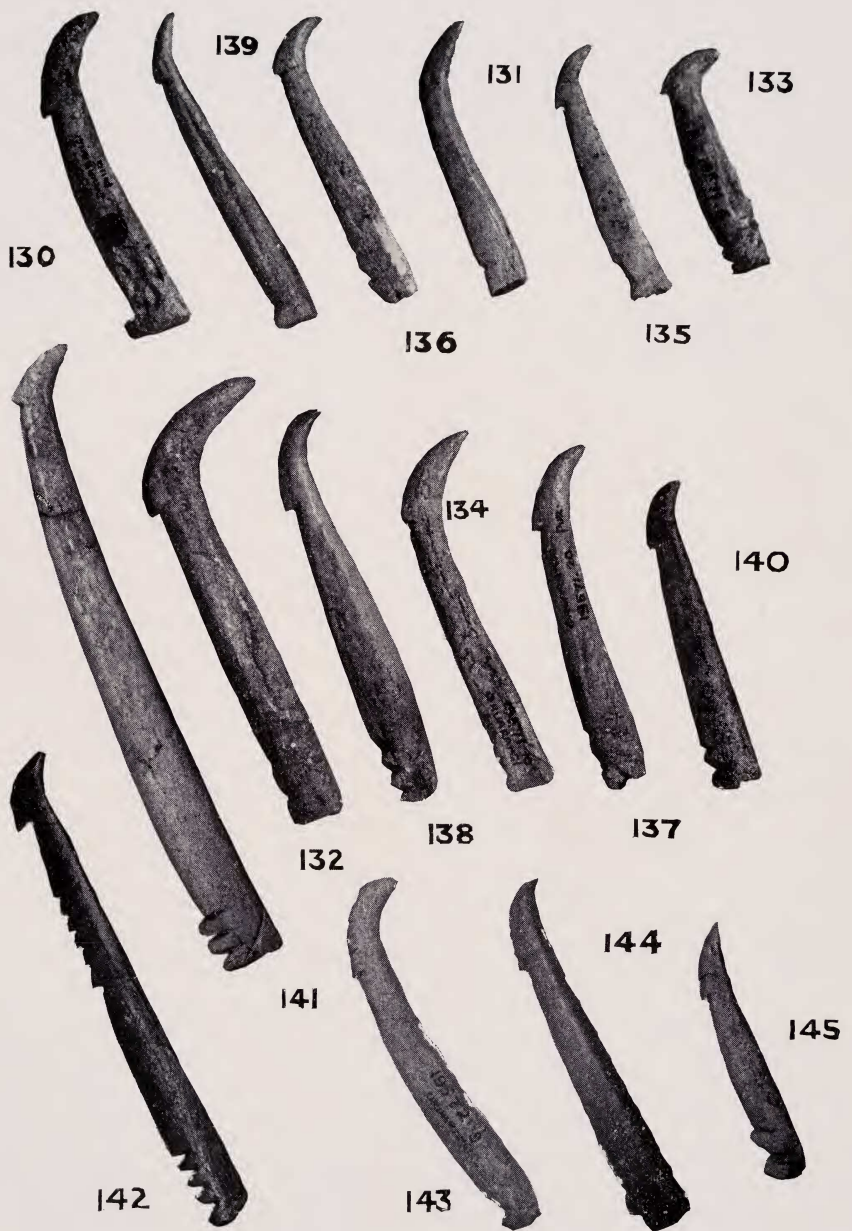
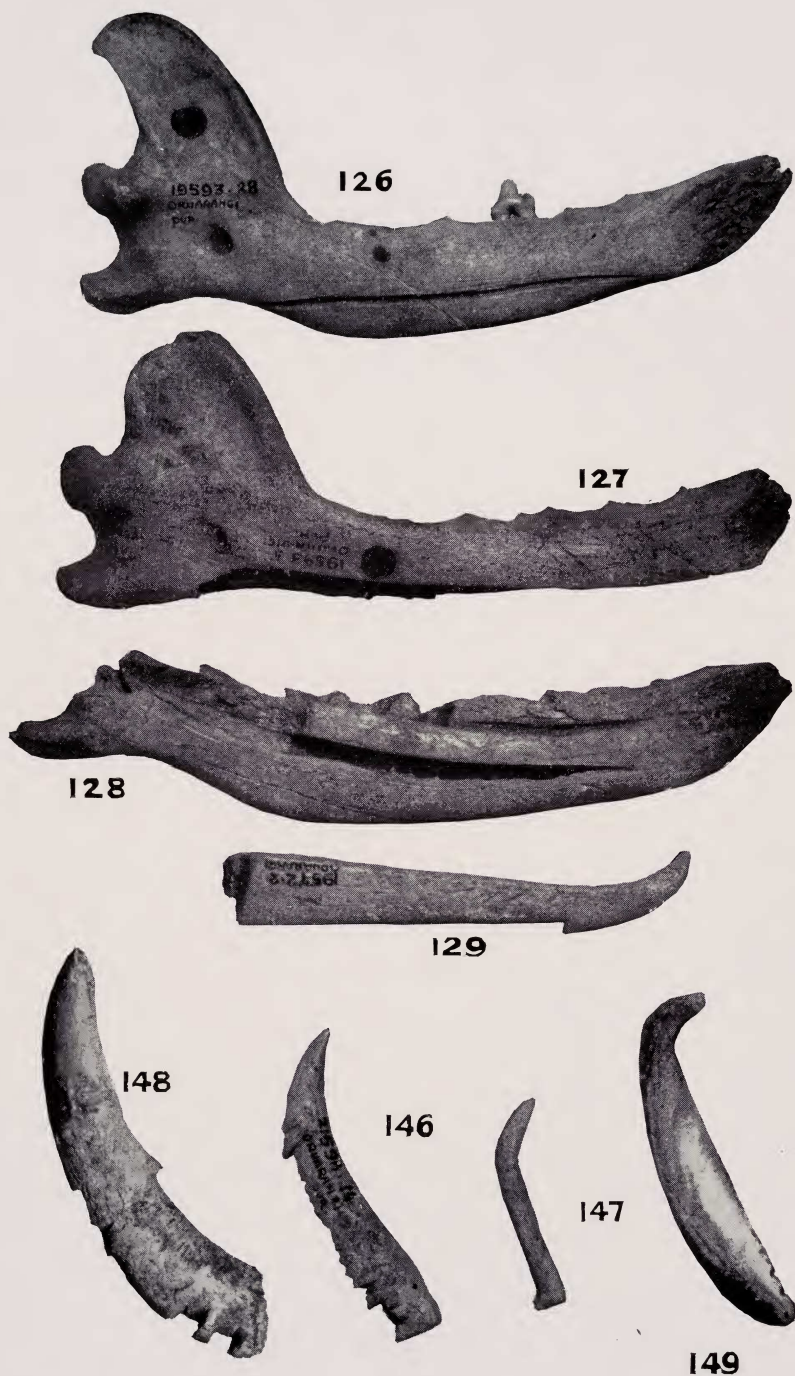


Fig. 131. Oruarangi barbed point in process of manufacture.

Figs. 130, 132-141. Oruarangi barbed points.

Figs. 142-145. Oruarangi points, displaying secondary barbs.



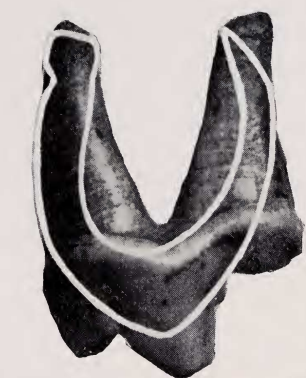
Figs. 126-129. A series illustrating the manufacture of an Oruarangi point from the lower jaw-bone of the native dog.

Figs. 146, 147. Bone points.

Fig. 148. Barbed point made from a cetacean tooth.

Fig. 149. *Toitoi* shell point.





154



153



150

151



152



Figs. 150, 152. Bone one-piece hooks.  
 Fig. 151. One-piece hook in process of manufacture, from a piece of a human femur.  
 Fig. 153. One-piece hook made from a molar tooth of a native dog.  
 Fig. 154. Molar tooth of a native dog. Portion used in fig. 153 shown by white line.